

Central Intelligence Agency



Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

3 MAR 1983

MEMORANDUM FOR: E. Allan Wendt
Deputy Assistant Secretary for International
Energy Policy
Department of State

FROM : [REDACTED]
Deputy Director for Economic-Resource Analysis
Office of Global Issues

SUBJECT : Japanese LNG Requirements: Looking to the
1990s [REDACTED]

1. In response to your request, I am forwarding the
attached information on Japanese LNG requirements. [REDACTED]

2. If you have any questions or if we can be of further
assistance, please feel free to contact [REDACTED]

Attachment:

Japanese LNG Requirements: Looking to the 1990s
GI M 83-10050, March 83 [REDACTED]

[REDACTED]

[REDACTED]

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SUBJECT: Japanese LNG Requirements: Looking to the 1990s

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3 March 1983

Japanese LNG Requirements: Looking to the 1990sSummary

According to revised industry forecasts, Japanese liquefied natural gas (LNG) demand in the 1990s will not reach the high levels forecast by most analysts only a year or two ago. Consequently, Japan will have greater-than-expected flexibility to choose among potential suppliers on the basis of economic and security considerations. These lower LNG requirements probably mean that Japanese demand will be insufficient to support economic construction of a proposed Alaska to Japan gas project. [redacted]

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This memorandum was prepared by [redacted] Energy Issues Branch, Office of Global Issues. The information contained herein is updated to 1 March 1983. Comments may be directed to [redacted] Chief, Energy Issues Branch, [redacted]

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Japanese LNG Requirements: Looking to the 1990sRecent Trends

Japanese imports of LNG rose sharply during the 1970s, jumping from 60,000 barrels per day oil equivalent (b/doe) in 1973 to over 430,000 b/doe in 1980, representing 6 percent of Japanese energy consumption (Table 1).¹ The rapid expansion in LNG imports largely reflects two factors: Japanese efforts to reduce dependence upon imported oil, which currently accounts for over 60 percent of the country's energy use; and the development of the LNG industry in East Asia. Rapid growth in LNG import requirements, however, ended abruptly in 1980 and in 1982 imports approximated only 445,000 b/doe. LNG use in electricity generation, for example, which accounts for over three quarters of Japanese LNG consumption, rose only some 3 percent in 1982 compared with year earlier levels. []

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Slower growth in Japanese LNG requirements can be traced to sluggish economic activity and sharply higher gas prices. Real GNP growth averaged only 2.5 percent annually between 1980 and 1982 compared with an average annual rate of more than 5 percent between 1976-80. On the price front, LNG import prices have nearly doubled since 1979 (Table 2). The linkage between the price of gas and the price of crude oil in Japanese contracts accounted for the rapid rise. []

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Changing Outlook for the 1980s

Although Japanese LNG requirements will increase significantly during the 1980s, growth will likely be more moderate than previously anticipated. For one thing, we believe economic growth during the balance of the decade is apt to be less than was forecast a few years ago as slow economic expansion among Japan's trading partners limits Tokyo's ability to maintain rapid export growth. Government efforts to balance the budget, moreover, will probably place a further drag on the economy. []

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The high price of LNG relative to oil and strict contract conditions are further impediments to increased LNG use. The price of LNG is currently tied to crude oil prices in Japanese

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¹ Japanese usually measure LNG quantities in million metric tons. One million metric tons is approximately 25,725 b/doe based on a heat content of 52.77 million BTUs per metric ton. []

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contracts. Consequently, the price of heavy fuel oil--a lower quality by-product of crude oil and a major fuel in electric utilities and industry--is cheaper than LNG (Table 3). The cost of regasifying LNG--estimated at \$.35 per million BTU¹--further boosts the cost of LNG relative to oil. LNG contracts, moreover, are inflexible, containing "take or pay" clauses, which makes LNG less attractive to electric and gas utilities, according to industry sources. []

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As a result of these factors, forecasts of Japanese LNG requirements are being revised downward. The most recent Japanese Government forecast points to 1990 LNG requirements of over 1.1 million b/doe. We believe this government projection will prove too high, because it assumes a 5 percent annual economic growth rate for the 1980s. Recent private-sector projections already contain lower growth assumptions and consequently, lower energy demand estimates (Table 4).

- o The Institute of Energy Economics currently projects 1990 LNG requirements at 900,000 b/doe in its standard case--nearly a 10 percent downward revision from its May 1982 projection.
- o The Mitsubishi Research Institute places Japanese 1990 LNG needs at 950,000 b/doe.
- o The Petroleum Association of Japan projects 1990 requirements for the Japanese at 985,000 b/doe. []

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[] assuming an annual economic growth rate of around 3 percent, we believe Japanese LNG imports will increase by approximately 450,000 b/doe between now and 1990. LNG requirements are thus likely to be over 200,000 b/doe less than the Japanese were expecting when they initiated many of their gas supply projects in the mid-1970s. As a result, if all of the LNG projects now agreed to or under construction are completed as scheduled, we believe supplies to Japan will begin to exceed demand in the mid 1980s

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[] Given the potential surplus, the Japanese are not now concerned over potential delays in development projects:

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- o Previous sanctions on equipment sales to the Soviets will likely delay LNG shipments from the Sakhalin project by a few years.

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¹ According to the International Energy Agency, regasification costs are approximately \$.35 per million BTU, of which capital costs are \$.20, operating costs \$.06 and fuel costs \$.09. []

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Requirements Beyond 1990

Beyond 1990, growth in Japanese LNG requirements will likely be sluggish. Because of cost factors, Japan's Institute of Energy Economics does not expect a significant increase in LNG demand for electricity generation in the 1990s, and the projected rise in industrial gas use is slight. Although LNG use in the residential and commercial sectors will trend upwards, the lack of a gas distribution system outside of Japan's major cities will limit the increase. Taking these factors into account, we believe LNG requirements will increase by only about 100,000-200,000 b/doe in the 1990s, nearly 250,000 b/doe below the official Japanese Government projection. [REDACTED]

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Despite the expected sluggish growth in LNG requirements beyond 1990, Japan will need to contract for additional supplies. In addition to the 100,000 to 200,000 b/d growth in demand, existing agreements with Brunei and Abu Dhabi will expire in 1993 and 1997 respectively. As a result, demand for new supplies will total about 125,000-175,000 b/doe in 1995 and 255,000-355,000 b/doe in the year 2000. [REDACTED]

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Supply Options

Given the many projects under construction, the Japanese will have great flexibility in choosing their gas suppliers. [REDACTED]

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Canada is looking to supply Japanese gas needs. In late January, Canada's National Energy Board approved Dome Petroleum's proposal to ship 75,000 b/doe of LNG annually to Japan over a 15 year period beginning in 1986. Actual deliveries, however, remain subject to approval by federal and provincial authorities. Despite British Columbian approval, officials in Alberta--which is to supply 75 percent of the gas needed for the project--are currently skeptical of the proposal, given the low projected revenues to producers. [REDACTED]

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Thailand. Major gas discoveries in the Gulf of Thailand have resulted in LNG export proposals. In mid-1982, Thai Government officials expressed the desire to export 50,000-75,000 b/doe of LNG to Japan annually beginning in 1988. Japanese purchases of roughly 75,000 b/doe of LNG annually, Thai officials contend, would eliminate Thailand's trade deficit with Japan. Lower estimates of proven gas reserves and government conflicts with the company developing the deposits, however, have stalled the project, according to recent press reports. [REDACTED]

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Indonesia, the world's largest exporter of LNG, has sizable gas reserves to support future exports. A 200,000 b/doe annual capacity facility at Natuna is under consideration, but problems

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of removing large quantities of carbon dioxide from the huge gasfield need to be overcome. [REDACTED]

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The UAE is currently considering expanding the Das Island LNG plant from 57,000 b/doe to 85,000 b/doe in the mid-1980s, if additional offshore gas becomes available. Consideration is also being given to building a 150,000 b/doe LNG plant to use substantial quantities of gas recently discovered in the Khuff onshore gas zones. [REDACTED]

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Qatar, on the other hand, has again shelved plans indefinitely to export gas from the North Dome gasfields following a recent failure to reach agreement with the Japanese firms on gas volumes and prices, according to recent press reporting. The \$6 billion LNG project was to supply Japan with more than 180,000 b/doe of LNG annually in the 1990s. [REDACTED]

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Alaskan Connection. Currently, there is a proposal for exporting Alaskan North Slope natural gas to Japan, which envisions an 820 mile pipeline to carry North Slope gas to Southern Alaska for liquefaction and shipment to Japan. According to assessments by private US consulting firms, the LNG would be price competitive in the Japanese market in 1988, when deliveries of 125,000 b/doe could technically begin. Moreover, these assessments indicate the proposal is more economic and feasible than the plan for laying a 4,800 mile gas pipeline across Alaska and Canada to the continental United States. Aside from finding a market for North Slope gas, proponents also contend LNG sales to Japan could obviate Japan's need for Soviet gas from the Sakhalin Island project. [REDACTED]

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Whether the Japanese would go along with the Alaska proposal is far from certain. Japan has already contracted for all the gas it will need until 1990, and beyond 1990, additional Japanese LNG requirements probably will be insufficient to support the proposed capacity (370,000 b/doe) of the Alaskan project (Table 6). Under these circumstances unless additional customers can be found or the Japanese are willing to walk away from the Sakhalin or other LNG projects, it is unlikely that the Alaskan LNG project will be built. [REDACTED]

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Security of Supply Implications

The Japanese are currently dependent on Indonesia for over half of their LNG imports and are certainly aware of the dangers of becoming overly reliant on any one source for their LNG requirements. Security of supply was one reason Tokyo first joined the Sakhalin project in the mid-1970s, and Embassy reporting indicates that Tokyo still views the project as an opportunity to further diversify its sources of LNG. Japan could enhance its energy security by placing greater reliance on the United States and Canada for future supplies, but North American supplies would have to be price competitive. [REDACTED]


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At present, Japan probably could withstand a major LNG supply disruption as long as alternative oil supplies could be obtained. Japanese electric utilities--the principal gas consumers--maintain a significant ability to switch to alternative fuels. Currently, 62 percent of LNG-fired capacity can switch to alternative fuels, and by 1990 the utilities will have the capability to cut gas consumption by nearly 40 percent of total gas use. 

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Table 1

Japan: LNG Imports

(thousand b/doe)

<u>Year</u>	<u>Alaska</u>	<u>Brunei</u>	<u>Abu Dhabi</u>	<u>Indonesia</u>	<u>Total</u>
1973	25.4	35.4			60.8
1974	24.7	72.4			97.1
1975	26.2	102.6			128.8
1976	24.0	127.8			151.8
1977	26.1	135.4	18.2	32.6	212.3
1978	24.6	136.3	30.5	109.2	300.6
1979	24.6	142.6	37.6	177.4	382.2
1980	22.1	142.8	49.6	218.8	433.3
1981	27.6	134.4	50.4	224.0	436.4
1982 ¹	23.5	131.4	55.5	236.2	446.6

¹ Estimate based on January-October import levels.

Table 2

Japan: LNG Import Prices

(US \$ per million BTU)

<u>Year</u>	<u>Alaska</u>	<u>Brunei</u>	<u>Abu Dhabi</u>	<u>Indonesia</u>	<u>LNG Average</u>	<u>Crude Oil Average</u>
1973	.57	.53			.55	.57
1974	.72	1.53			1.32	1.89
1975	1.35	1.74			1.65	2.07
1976	1.64	1.83			1.80	2.20
1977	1.94	1.99	1.89	2.39	2.00	2.36
1978	2.17	2.12	2.15	2.74	2.33	2.43
1979	2.26	2.29	2.27	3.38	2.77	3.24
1980	4.81	4.79	5.26	5.16	5.03	5.70
1981	5.94	5.85	6.45	5.48	5.73	6.44
1982 ¹	5.74	5.66	6.17	5.53	5.64	6.08

¹ January-October.

Table 3

Japan: Energy Import Prices, 1982^a

(US \$ per million BTU)

LNG (Average)	5.46
Indonesia	5.12
Brunei	5.65
Alaska	5.75
Abu Dhabi	6.08
Crude Oil (Average)	5.94
Heavy Fuel Oil (Average)	5.06

^a October.

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Table 6

Trans-Alaska Gas System

(thousand b/doe)

	<u>Phase I</u>	<u>Phase II</u>	<u>Phase III</u>
Expected Completion Date	1988	1990	1992
LNG available	125	230	375

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